

CLAIMS

1. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:
an electrostatic discharge conducting contact element which is in time-extended contact with a person who is to be protected from electrostatic discharge when in use;
a control circuit electrically connected to said contact element, said control circuit including a first resistor element having a resistance which upon initial contact between the person and said contact element will drain some, but not all, electrostatic discharge from said contact element;
an inductor in series with said contact element; and
a ground circuit electrically associated with said control circuit.
2. The system defined in Claim 1 wherein the first resistor element is physically located closely adjacent to said contact element.
3. The system defined in Claim 1 wherein said first resistor element is in series with contact element.
4. The system defined in Claim 3 wherein said control circuit further includes a second resistor element in series with said inductor.

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5. The system defined in Claim 4 wherein said control circuit has the inductor physically located between the first and second resistor elements and the first resistor element is physically located between said contact element and the inductor.

6. The system defined in Claim 2 wherein said first resistor is located within one foot of said contact element.

7. The system defined in Claim 1 wherein said control circuit further includes a second resistor, and said second resistor has a value of at least one megohm.

8. The system defined in Claim 1 wherein said control circuit further includes a capacitor in series with said first resistor element.

9. The system defined in Claim 1 wherein said control circuit further includes a transistor in series with said first resistor element.

10. The system defined in Claim 1 further including a second electrostatic conducting contact element.

11. The system defined in Claim 1 wherein the time extended contact is greater than 100 milliseconds.

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12. The system defined in Claim 1 further including a user contacting element and said electrostatic discharge conducting contact element is located in said user contacting element.

13. The system defined in Claim 12 wherein said user contacting element includes a computer mouse pad.

14. The system defined in Claim 1 wherein said first resistor has a value of approximately sixty megohms.

15. The system defined in Claim 1 wherein said ground circuit includes signal leads.

16. The system defined in Claim 1 further including a conductor electrically connecting said contact element to said ground circuit, with said resistor being located within one foot of said contact element and further including second resistor in said conductor and located spaced from said first resistor and adjacent to said ground circuit.

17. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:
an electrostatic discharge conducting contact element which is in time-extended contact with a person who is to be protected from electrostatic discharge when in use;

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a control circuit electrically connected to said contact element,
said control circuit including a first resistor element in
series with said contact element and being located within
one foot of said contact element; and
a ground circuit electrically associated with said control
circuit.

18. The system defined in Claim 17, wherein said first resistance
has a value of approximately five megohms.

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19. A system for protecting a person from surprise or
uncomfortable electrostatic discharge (ESD) comprising:
an electrostatic discharge conducting contact element which is in
time-extended contact with a person who is to be protected
from electrostatic discharge when in use;
a control circuit electrically connected to said contact element,
said control circuit including a first resistor element in
series with said contact element and having a resistance in
excess of five megohms; and
a ground element electrically connected to said control circuit.

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20. The system defined in Claim 1 further including an electrical
plug with said control circuit being located at least partially
in said electrical plug.

21. The system defined in Claim 20 wherein said electrical plug includes a ground prong.

22. The system defined in Claim 20 further including a test circuit.

23. The system defined in Claim 20 and wherein said first resistor is physically located closely adjacent to said contact element.

24. The system defined in Claim 23 and wherein said control circuit further includes an inductor and a second resistor in series with said first resistor.

25. The system defined in Claim 24 wherein said inductor has an inductance of less than one millihenry.

26. The system defined in Claim 24 wherein said second resistor has a resistance of one megohm.

27. The system defined in Claim 20 wherein said plug includes a prong positioned as a hot prong, said prong being non-conductive from said plug.

28. The system defined in Claim 27 wherein said plug further

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includes a neutral prong positioned as a neutral prong, said neutral prong being non-conductive from said plug.

29. The system defined in Claim 20 wherein said plug includes female receptacles.

30. The system defined in Claim 20 wherein said plug includes an internal resistor having a value of at least one megohm.

31. The system defined in Claim 20 wherein said plug includes a plurality of grounding connectors.

32. The system defined in Claim 1 further including a plug adapter with said control circuit being at least partially located in said plug adapter.

33. The system defined in Claim 32 further including an output lead from said plug.

34. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:

a headphone device;

an electrostatic discharge conducting contact element which is located in said headphone device to be in time-extended contact with a person who is using said headphone device and

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who is to be protected from electrostatic discharge when using said headphone device;
a control circuit electrically connected to said contact element, said control circuit including a first resistor element in series with said contact element and having a resistance which will upon initial contact between the user and said contact element drain some, but not all, ESD from said contact element; and
a ground circuit electrically associated with said control circuit.

35. The system defined in Claim 34 wherein said headphone device includes two electrical conductors.

36. The system defined in Claim 35 including a resistor connected to each conductor.

37. The system defined in Claim 34 further including a jack on said headphone device to which said control circuit is releasably connected.

38. The system defined in Claim 34 wherein said headset includes an ear pad and said first resistor is part of said ear pad.

39. The system defined in Claim 34 wherein said headphone device

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includes a conductive headset pad.

40. The system defined in Claim 39 wherein said conductive headset pad has a resistance of at least 0.025 megohms.

41. The system defined in Claim 34 wherein said control circuit is connected to an ear pad on said headphone device.

42. A system for protecting a person from surprise or painful electrostatic discharge (ESD) comprising:

a user contacting device having a plurality of user contacting locations thereon;

an electrostatic discharge conducting contact element at each user contacting location of the plurality of user contacting locations and which contact a user in a time-extended manner when in use;

a control circuit electrically connected to each of said contact elements and including a first resistor having a resistance that is sized to upon initial contact between the user and said contact element drain some, but not all, electrostatic charge from said contact element; and
a ground circuit electrically associated with said control circuit.

43. The system defined in Claim 42 wherein the user contacting

locations of said user contacting device are electrically insulated from each other.

44. The system defined in Claim 43 wherein the user contacting locations include a plurality of shapes.

45. The system defined in Claim 42 wherein said control circuit further includes a capacitor.

46. The system defined in Claim 42, wherein each of said first resistors has a resistance of approximately five megohms.

47. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:
a computer mouse;

an electrostatic discharge conducting contact element which is located in said computer mouse to be in time-extended contact with a person who is using said computer mouse and who is to be protected from electrostatic discharge when using said computer mouse;

a control circuit electrically connected to said contact element, said control circuit including a first resistor element having a resistance which will upon initial contact between the user and said contact element drain some, but not all, electrostatic charge from said contact element; and

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a ground circuit electrically associated with said control circuit.

48. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:
a computer keyboard;

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an electrostatic discharge conducting contact element which is located in said computer keyboard to be in time-extended contact with a person who is using said computer keyboard and who is to be protected from electrostatic discharge when using said computer keyboard;

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a control circuit electrically connected to said contact element, said control circuit including a first resistor element having a resistance which will upon initial contact between the user and said contact element drain some, but not all, electrostatic charge from said contact element; and

a ground circuit electrically associated with said control circuit.

49. The system defined in Claim 48 wherein said user contacting element includes a computer keyboard and said contact element is located in a key on said computer keyboard.

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50. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which is in time-extended contact with a person who is to be protected from electrostatic discharge when in use;

a ground circuit; and

a Litz wire electrically connecting said contact element to said ground circuit.

51. The system defined in Claim 50 further including a resistor in series between said Litz wire and said ground circuit.

52. The system defined in Claim 1 wherein said first resistor element is in series with said contact element.

53. The system defined in Claim 1 further including a second resistor element, with said first resistor element being located closer to said contact element than said second resistor and said second resistor being located closer to said ground circuit than said first resistor.

54. A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which is in time-extended contact with a person who is to be protected from electrostatic discharge when in use;

a ground circuit;

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a conductor connecting said contact element to said ground circuit;

a first resistor element in said conductor near said ground circuit, said first resistor element being sized to prevent AC shock from moving from said ground circuit past said first resistor and through said conductor toward said contact element; and

a second resistor element in said conductor nearer to said contact element than said first resistor to reduce initial contact shock, said first and having a resistance which upon initial contact between the person and said contact element will drain some, but not all, electrostatic charge from said contact element.

55. The system defined in Claim 20 wherein said plug includes a plurality of internal resistors.

56. The system defined in Claim 48 further including an inductor in series with said contact element.

57. The system defined in Claim 47 further including an inductor in series with said contact element.

58. The system defined in Claim 42 further including an inductor in series with each contact element.

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59. A method of protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:

providing an electrostatic discharge (ESD) conducting contact element;

initially contacting the ESD contact element for a time-extended period of longer than a touch;

draining some, but not all, electrostatic charge during the initial contact; and
reducing radio frequency interference associated with said draining step.

60. The method defined in Claim 59 including a step of further protecting a person who is initially contacting the ESD contact element from shock associated with a grounding error.

61. The method defined in Claim 60 wherein the time-extended period exceeds 100 milliseconds.

62. The method defined in Claim 61 further including steps of repeatedly touching the ESD contact element.

63. The method defined in Claim 62 wherein the person has an initial amount of ESD upon initial contact and said step of repeatedly touching the ESD contact element drains less than the initial amount of ESD at each touch.

